BI-LATERAL BODY WEIGHT SUPPORT SYSTEM

Abstract

An exercise and therapeutic device having a patient support suspended upon a pneumatic spring. The pneumatic spring is extendable and retractable over an operative extension range during a patient treatment session. The operative extension range includes a low level oscillation range such as occurs when a patient runs on a treadmill and a high level oscillation range such as when a patient performs kneebends, squats, hops and jumps. The pneumatic spring is adapted to impart continuous upward force upon the patient support during a treatment session in a manner so that the upward force has a substantially hyperbolic magnitude across both the low level oscillation range and the high level oscillation range. The pneumatic spring includes a piston reciprocatingly and sealingly engaged within a cylinder. The piston divides the cylinder into two variable chambers. An accumulator is in fluid communication with one of the variable volume chambers of the cylinder for increasing the effective air volume of the cylinder within which the piston operates. The accumulator forms an enveloping sleeve about the cylinder. A pressure gauge is placed in fluid communication with the pneumatic spring and is calibrated to display the magnitude of the upward force being applied to the

patient support by the pneumatic spring. The cylinder has one or more direct port(s) to the accumulator for facilitating the exchange of air between the cylinder and the accumulator. The direct port has a diameter of at least three-eighths of an inch which serves to minimize damping effects caused by the direct port's narrowed passage between the cylinder and the accumulator.